SI Chemistry - Full Discipline Demo

pH of Common Materials

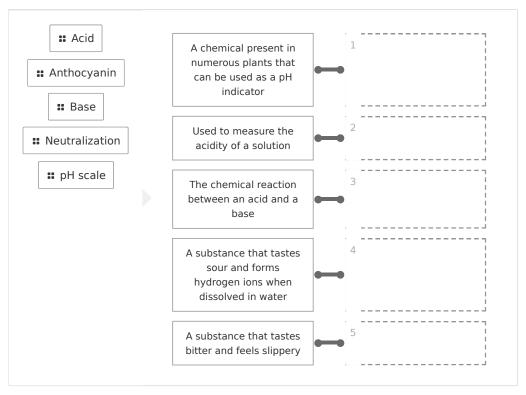
Final Report - Answer Guide

InstitutionScience Interactive UniversitySessionSI Chemistry - Full Discipline DemoCourseSI Chemistry - Full Discipline Demo

Instructor Sales SI Demo

Test Your Knowledge

Match each term with the best description.



Correct answers:

1 Anthocyanin 2 pH scale 3 Neutralization 4 Acid 5 Base



Order the items from the least acidic to the most acidic.

 \equiv Concentrated sodium hydroxide solution

1 Correct answer: pH = 14

■ Orange juice

2 **Correct answer:** Concentrated sodium hydroxide solution

 \equiv pH = 1

3 Correct answer: Soap

 \equiv pH = 7

4 **Correct answer:** pH = 7

■ pH = 14

5 **Correct answer:** Orange juice

≡ Soap

6 **Correct answer:** Concentrated sulfuric acid solution

■ Concentrated sulfuric acid solution

7 **Correct answer:** pH = 1

Exploration

Characteristics of bases include ____.

- being slippery to the touch
- having a bitter taste
- a clear color
- being slippery to the touch and having a bitter taste
- All of the above

	Weak bases often feel slippery to the skin because they	
	coat the skin with their chemical configuration	
	 react with natural substances in the skin to form a protective coating 	
	odegrade the fatty acids and oils on the skin	~
	Substances are classified as acids or bases depending on	
	their color and thickness	
	how they react with other chemicals	~
	the type of container used to hold them	
	On the nul scale 7 venuescents a neutral substance As the number of	
	On the pH scale, 7 represents a neutral substance. As the number of H ⁺ increases in solution, the pH number; as the number of OH ⁻ ions	
	increases in solution, the pH number	
	o decreases; increases	~
	increases; decreases	
	Anthocyanins serve as natural pH indicators, because they change color a different pH values.	t
	True	✓
	○ False	
Fverc	cise 2	
LACIC	1130 2	
	re and contrast the results between the commercial and homemade pH test Which test strips were more accurate? Explain your answer.	
	ommercial pH strips were specific enough (when matched with the pH range color	
not on	ly describe a solution as acidic, neutral, or basic, but to allow a quantitative numb ed to the solution. The homemade pH strips allowed a solution to be defined withi	er to be



range, but did not allow for specific numerical differentiation between solutions. Both strips were generally accurate as they provided the same range of results. However, as the commercial strips allowed a quantitative number on the pH scale to be defined, the commercial strips were more specific.

Why is the pH scale important in science? Give several examples of scientific applications.			
ex an me If y yo	ample, blood should have a pH re d their blood pH showed a readin edical personnel would know to st	-reflux and chose to take an antacio asic	eling well
What infor	mation about a chemical soluti	on can be inferred from knowing	its pH value?
hy		one can calculate the hydrogen ion a e solution. One can also use pH info for an acid.	
f a chemic	cal has a pH of 3, how could you	u alter its pH value to be more ba	nsic?
	cal has a pH of 3, adding an amou e more basic.	unt of a base, such as NaOH, would	change the pH
	a Table 1: pH Observations		
	Item Tested	Commercial pH Strip Color and pH	Homemade pH Strip
1	1 M HCl (hydrochloric acid)	Magenta 2.0	Pink; 1-3



2	0.1 M NaOH (sodium hydroxide)	Dark blue; 12.0	Green; 9-12
3	Distilled water	Yellowish-green; 6.0-7.0	Purple, no change; 4
4	Student answers will vary	No sample answer	No sample answer
5	No sample answer	No sample answer	No sample answer
6	No sample answer	No sample answer	No sample answer
7	No sample answer	No sample answer	No sample answer
8	No sample answer	No sample answer	No sample answer
9	No sample answer	No sample answer	No sample answer
10	No sample answer	No sample answer	No sample answer
11	No sample answer	No sample answer	No sample answer
12	No sample answer	No sample answer	No sample answer

Competency Review

A cleaning product with a pH of 8 is considered, whereas a product with a pH of 6 is considered	
basic; acidic	,
basic; neutral	
neutral; acidic	
acidic; basic	
are found in everyday food items such as lemons, limes, and oranges.	
○ Acids	
Bases	

An example of a base is	
○ citrus	
soap	
bleach	
both soap and bleach	✓
All of the above	
A solution with a pH of 1 is less acidic than a solution with a pH of 6.	
○ True	
○ False	✓
A pH indicator allows scientists to measure the pH of a substance.	
qualitatively	✓
quantitatively	
electrically	
Red onions are red in the presence of an acid and green in the presence a base. Give an example of a substance that would cause a red onion to turn green.	of
O HCI	
○ NaOH	✓
Distilled water	
All of the above	
Results of a pH test with commercial test strips are dependent upon the volume of the substance tested.	
O True	
○ False	✓
•	



тпе рн	of soap is nearest to the pH of because both are		
○ NaO	DH; basic	~	
O NaO	OH; acidic		
O HCI;	basic		
O HCI;	acidic		
Extension O	uestions		
Extension Questions			
Swimming pools are recommended to be at a pH of 7.2 - 7.8. If the pool is too acidic, it will corrode metal equipment and cause skin irritation. If it is too basic, it will cause scaling and make the water cloudy. You measure the pH of your pool and it reads a pH of 6.8. What can you do to raise the			

pH to the proper range?
(SAMPLE ANSWER BELOW)

Add a weak base to the pool water. A strong base could raise the pH too much.